SUPPLEMENTAL INFORMATION FOR CORE PROJECT
ENDANGERED SPECIES ACT CONSULTATION
WRB REFINING, LLC ▪ WOOD RIVER REFINERY
CONOCOPHILLIPS ▪ WOOD RIVER PRODUCTS TERMINAL

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1. BACKGROUND

On April 17, 2007 the WRB Refining, LLC Wood River Refinery submitted an Endangered Species Act (ESA) analysis in order to supplement the Prevention of Significant Deterioration (PSD) permit application for the Coker and Refinery Expansion (CORE) project. The purpose of the report was to provide the results of deposition modeling and media concentration calculations as well as an evaluation of the anticipated effect of the compounds of potential concern (COPCs) on endangered or threatened species of concern. Based on recent discussions with Mr. Mike Coffey of the United States Fish and Wildlife Service (FWS), additional information is needed on emissions and potential impacts of dioxin and dioxin-like compounds from the proposed project. This information is included in this supplemental report.

2. EMISSION RATES AND DISCUSSION OF POTENTIAL IMPACTS

The Wood River Refinery uses perchloroethylene during the catalyst regeneration process at the catalytic reformer units at the facility. During this regeneration process, very small amounts of dioxin or dioxin-like compounds may be emitted to the atmosphere. The Wood River Refinery estimates air emissions from these units based on draft guidance from EPA's *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds*[1]. The combined annual air emissions from the existing catalytic reformer units (#1, #2 & #3) calculated for the 2005 Toxic Release Inventory (TRI) was 0.1787 grams.

No physical modifications of these units are needed as part of the CORE project. Increased utilization of these units will occur as a result of slightly higher feed throughput rates. However, no significant increase in dioxin emissions is expected, since these units are already at a maximum optimum regeneration frequency.

According to the EPA, the dioxin and dioxin-like compounds have similar chemical structure and physical-chemical properties[2]. Therefore, it is assumed that any dioxin and dioxin-like compounds from the catalytic reformer units will be emitted as 2,3,7,8-TCDD for the purposes of this discussion. The melting point of 2,3,7,8-TCDD is 350 °C and the estimated discharge temperature from the catalytic reformer units is approximately 45 °C. Therefore, all of the 2,3,7,8-TCDD is expected to be discharged as particulate (i.e., no vapor phase discharge). The discharge point during catalyst rejuvenation is through a small caustic water scrubber on the regeneration discharge vent.

Deposition modeling of particulate matter, in addition to the parameters normally used for atmospheric dispersion modeling, requires the use of two additional variables: particle density and particle size distribution. Deposition modeling was not conducted for the 2,3,7,8-TCDD discharges from the catalytic reformer units, however, the particle density and particle size distribution for this compound is similar to the previously modeled polycyclic aromatic hydrocarbons (PAH's)[3]. The potential emission rate for PAH's from the CORE project that was used in the deposition modeling was 25.7 pounds (11,668 grams) per year. The modeling for the PAH's resulted in zero deposition to the soil, water or sediment. Since the properties of the two compounds are similar and the deposition rate for the PAH's at a much higher emission rate was zero, it can be assumed that no deposition of 2,3,7,8-TCDD due to the CORE project would occur to the media surrounding the facility. Therefore, no impacts to endangered or threatened species are anticipated due to emissions of 2,3,7,8-TCDD or other dioxin or dioxin-like compounds from the CORE project.

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[1] U.S. EPA, Office of Research and Development, *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds*, EPA/600/P-00/001Cb, December 2003.

[2] U.S. EPA, Office of Research and Development, *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds*, EPA/600/P-00/001Cb, December 2003, pg 1-4.

[3] The particle size distribution and particle density assumed for the PAH deposition modeling performed for the CORE Project ESA Analysis is similar to the particle size distribution and particle density used in the *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds, Part 1, Volume 3, Chapter 3* (i.e., combustion processes generated particle bound emissions of PAH's and dioxin or dioxin-like compounds).